

### Abstract of the Disclosure

A method of forming a trench isolation in a semiconductor substrate is described, which comprises the steps of forming a trench on the substrate, forming a diffusion barrier insulating layer, forming a thermal oxide layer both sidewall and bottom of the trench contacted with the diffusion barrier insulating layer, forming a nitride liner, and forming trench isolation material to fill the trench. A multi-structure of the barrier layer and the thermal oxide layer is provided between the nitride liner and the trench, resulting in minimization of transistor characteristic deterioration. A thin thermal oxide layer is formed to achieve improved trench etching profile.